REMARKS

Please reconsider the application in view of the above amendments and the following remarks.

Status of Claims

Claims 1-28 are pending in this application. By this Amendment, claims 1, 4, 9, 12, 14, 15, 18, 21 and 23-28 have been amended. Claims 29-34 have been newly added. These amendments introduce no new matter and support is replete throughout the specification. These amendments are made without prejudice and are not to be construed as abandonment of the previously claimed subject matter or agreement with any objection or rejection of record.

Claim Objections

The Office Action has objected to claims 4, 12, 18, 24 and 28 because the Examiner contends that the following informalities: "[t]he term '[Numeral 126]' and '[Numeral 127]' should be deleted. Additionally, these claims should be written in one sentence form." To overcome the objections, Applicants have amended the claims as suggested by the Examiner. Accordingly, applicants request that the objection be withdrawn.

Claim Rejections - 35 U.S.C. §112

The Examiner has rejected claim 1 is rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The examiner alleges that "[i]t is ambiguous whether the term 'an industrial product' (Line 2) is referring to the 'industrial products' previously cited or if it is a different 'industrial product'." Further, the examiner contends that claim is indefinite because "[i]t is unclear if the pitch angle, yaw angle and tangential direction is referring to a description of the curve or if it is referring to a description/characteristic of the industrial product." Also, the examiner argues that "[i]t is [] unclear if the terms 'curve length' and 'curve length variable' is referring to the 3D curve or to a new curve." As such, Applicants have amended claim 1 to introduce "industrial products" with proper antecedent basis. Also, Applicants have amended the language of claim 1 to make clear that the pitch angle and a yaw angle in a tangential direction of the three dimensional clothoid curve is given by a quadratic expression of a curve length or a curve length variable.

The Examiner also rejects claims 4, 12, 18, 24 and 28 under 35 U.S.C. §112, second paragraph, as being indefinite. The examiner alleges that "[i]t is unclear if the term 'a curve' is referring to the three dimensional clothoid curve." Accordingly, Applicants have corrected the antecedent basis problem in aforesaid claims by replacing "a curve" with "the curve."

The Examiner has rejected claims 14, 15, 23 and 25-27 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner contends that "[i]t is not clear

what subject matter applicant regards as the invention when stating 'expressing a trajectory of a machine tool or a contour shape of a workpiece'." The Examiner contends that "[t]he relationship between the machine tool and the contour shape is not clear." Applicants have amended the claims by removing the alternative expression from the aforesaid claims. Accordingly, Applicants have added new claims 29, 30, 31, 32, 33 and 34 that correspond to and incorporate the subject matter deleted from the claims 14, 15, 23, 25, 26 and 27.

Because the scope of the aforesaid claims, as amended, can be ascertained with reasonable certainty when read in light of the specification, Applicants submit that the aforesaid claims particularly point out and distinctly claim the invention. Accordingly, Applicants request that the rejection under 35 U.S.C. 112, 2nd paragraph, be withdrawn. Moreover, Applicants note that the amendment to the aforesaid claims merely clarifies and makes explicit what was already implicitly recited in the claim.

Claim Rejections - 35 U.S.C. §101

The Examiner has rejected claims 9, 14, 21 and 26 under 35 U.S.C. §101 because the Examiner contends that the claimed invention is directed to non-statutory subject matter. The examiner alleges that these claims are directed towards software per-se. Applicants have amended the aforesaid claims in the form of software on the media. Applicants submit that the amended claims now fall within the statutory subject matter. Accordingly, Applicants request that the rejection under 35 U.S.C. §101 be withdrawn.

Claim Rejections - 35 U.S.C. §102

The Examiner has rejected claims 1-2 and 4-28 under 35 U.S.C. §102(b) as being anticipated by Guiqing et al "3D Discrete Clothoid Splines", 2001 IEEE (referred to as Guiqing et al).

In order for a reference to anticipate an invention, the reference must teach each and every feature of the claimed invention. Claims 1-2 and 4-28 are drawn to ... *wherein each of a pitch angle and a yaw angle in a tangential direction of said three dimensional clothoid curve is given by a quadratic expression of a curve length or a curve length variable.*

Guiqing et al. is alleged to disclose "designing industrial products, characterized in that a shape of an industrial product is designed by using a three-dimensional clothoid curve of claims 1-2 and 4-28 in which each of a pitch angle and a yaw angle in a tangential direction is given by a quadratic expression of a curve length or a curve length variable and characterized in that the industrial product is a machine including a mechanism in which a mechanical element having a mass moves and a trajectory of motion of the mechanical element is designed by using the three-dimensional curve (referred to as the three-dimensional clothoid curve) (see at least Section 1, Section 3.2 and Section 4)." Applicants disagree with the Examiner.

Guiqing et al. discloses 3-dimensional discrete clothoid splines extended from 2-dimensional discrete clothoid splines. The 3-dimensional discrete clothoid splines are constructed by a method as follows:

A polygon P of which apexes are row of points being interpolated is first made, and new apexes are inserted between apexes of the polygon P so that a new polygon Q is made. Each apex of a polygon Q is denoted by qi. A polygon Q is called a discrete clothoid spline (DCS) if the two conditions are satisfied as described in Definition 2 in page 322 of Guiqing. First condition requires that apexes of the polygon Q are equidistant from a neighboring apex of the polygon Q. Second condition requires that a curvature of Q is linearly distributed in each edge of P.

It is possible to construct the 3-dimensional discrete clothoid splines by inserting new apexes of the polygon Q in the polygon P so that the above two conditions are satisfied.

However, it is impossible to express the 3-dimensional clothoid splines constructed by Li Guiqing et al in a form where each of a pitch angle and a yaw angle in a tangential direction of the 3-dimensional clothoid curve is given in a quadratic expression of a curve length or a curve length variable.

In contrast, the claimed invention recites a feature that a dimensional clothoid curve is expressed in a form where each of a pitch angle and a yaw angle in a tangential direction of the 3-dimensional clothoid curve is given in a quadratic expression of a curve length or a curve length variable.

Expressing the feature of the 3-dimensional clothoid curve in the form above assures that the tangential direction, a normal direction and a curvature are continuous in respect of the curve length or the curve length variable. Because, the normal direction is provided by differentiating

the quadric expression in a first order, and the curvature is provided by differentiating the quadric expression in a second order, it is therefore possible to provide smooth curves with high-quality. (see page 23, paragraph [0049]).

The cited references and the references submitted by applicants do not describe the above feature, i.e. each of a pitch angle and a yaw angle in a tangential direction of the 3-dimensional clothoid curve is given in a quadratic expression of a curve length or a curve length variable.

As noted above, in order for a reference to anticipate an invention, the reference must teach each and every feature of the claimed invention. Since Guiqing does not teach every feature of the claimed invention, i.e., Guiqing fails to teach *wherein each of a pitch angle and a yaw angle in a tangential direction of said three dimensional clothoid curve is given by a quadratic expression of a curve length or a curve length variable*, Applicants submit that the rejection is improper and respectfully request that it be withdrawn.

Claim Rejections - 35 U.S.C. §103

The Examiner has rejected claim 3 under 35 U.S.C. §103(a) as being unpatentable over Guiqing et al, "3D Discrete Clothoid Splines", 2001 IEEE in view of Drennen et al U.S. Publication No. 2002/0189385.

Because the cited prior art (alone or in combination) do not teach or disclose the features in claim 1, Applicants submit that dependent claim 3 is patentable for at least the same reasons as

presented above in claim 1. Accordingly, Applicants respectfully submit that the rejection is improper and request that it be withdrawn.

Conclusion

The claims have been shown to be allowable over the cited art. Applicants believe that this paper is responsive to each and every ground of rejection cited in the Office Action in the Action dated January 7, 2008, and respectfully request favorable action in this application. The examiner is invited to telephone the undersigned, applicants' attorney of record, to facilitate advancement of the present application.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP

Robert Y. Raheja
Attorney for Applicants
Registration No. 59,274
Telephone: (202) 822-1100
Facsimile: (202) 822-1111

TEB/RYR/adp